Televes®

Ref. 7689

CoaxData 200Mbps-HDTV

User Manual

Important safety instructions

Condiciones generales de instalación:

- Before handling or connecting this equipment, please read carefully all warnings and instructions in this manual.

- In order to reduce the risk of fire or electric shock, do not expose the equipment to rain or in excessively moisture conditions.

- Do not take the cover off the equipment without disconnecting it from the mains.

- Do not obstruct the equipment's ventilation system.

- Please allow air circulation around the equipment.

- The equipment must not come into contact with water or even be splashed by liquids. Do not place containers with water on or near the equipment if it is not adequately protected.

- Do not place the equipment near heat sources, like radiators, stoves, heaters or other electronic equipment.

- Do not place the equipment where it may be affected by strong vibrations or shocks.

How to use the equipment safely:

- The mains voltage for this product is: 196-264V~ 50/60Hz.

- If any liquid or object falls inside the equipment, please contact a specialised technician.

- To disconnect the equipment from the mains, pull from the plug, and never pull from the cable.

- Do not connect the equipment to the mains until all the other connections have been made.

- The mains socket that is going to be used to connect the equipment should be located nearby and should be easily accessible.

Description of the electrical safety symbols:

This symbol indicates that the equipment complies with the requirements of CE mark.

This symbol indicates indoor use only.

This symbol indicates that the equipment complies with the safety requirements for class II equipment.

Introduction

Ethernet Modem over Coaxial. CoaxData 200Mbps-HDTV

Thank you for purchasing the Co**axData 200Mbps-HDTV** adapter. From now on you will be able to connect multiple PCs over a **coaxial or an electrical network** at your home, at a hotel or at a residential building; without extra cables, or hubs, or Ethernet switches.

The **CoaxData 200Mbps-HDTV** allows us to transmit IP data by using building' wired networks. If it is the coaxial cable network, these IP data are transmitted simultaneously with the TV channels or services. This device features two standard F female connectors, 2 Ethernet ports, a built-in power supply and ability to transmit up to 200 Mbps.

Characteristics

- Possibility to connect your computer to the Internet access services using the existing cabling in your building.
- Easy installation, no need to open the computer or install any software driver.
- 2 LEDs to indicate the status of the modem.
- Two Ethernet connectors to allow connection to multiple computers in your home. PC, game console, printer, STB (Set-top Box), ... etc.
- Modulation mechanisms are capable of transmitting 200 Mbps (channel rate).
- **Sharing access to high speed Internet**.
- Connect up to 253 modems in its distribution network. Availability for use up to 4 masters on the same frequency band, enabling 1.012 slaves in its MDU / MTU (Multi-Dwelling/Multi-Tenant Unit), also known as MxU.
- No hubs or switches are required. Data are transmitted through the chosen cable installation.
- The operating band is within the corresponding return channel (2-28 MHz).
- 85dB maximum attenuation is supported. No requirement of minimum attenuation.
- Powerful channel coding system with automatic error correction techniques based on **FEC** (Forward Error Correction) and **TCC** (Convolutional Turbo Codes), allowing transmission/reception of signals with only 3 dB of SNR.
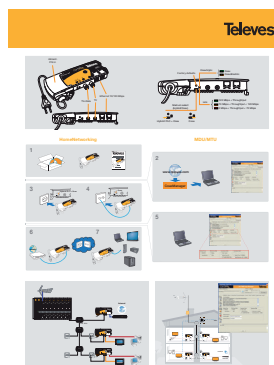
System requirements

■ To use the device you must have a PC with an Ethernet network interface.

■ The system is fully PnP (Plug and Play) and does not require installation of any additional software or drivers.
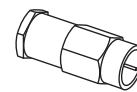
Contents of package CoaxData 200Mbps-HDTV

■ Ref 7689, CoaxData 200Mbps-HDTV
■ Quick user guide
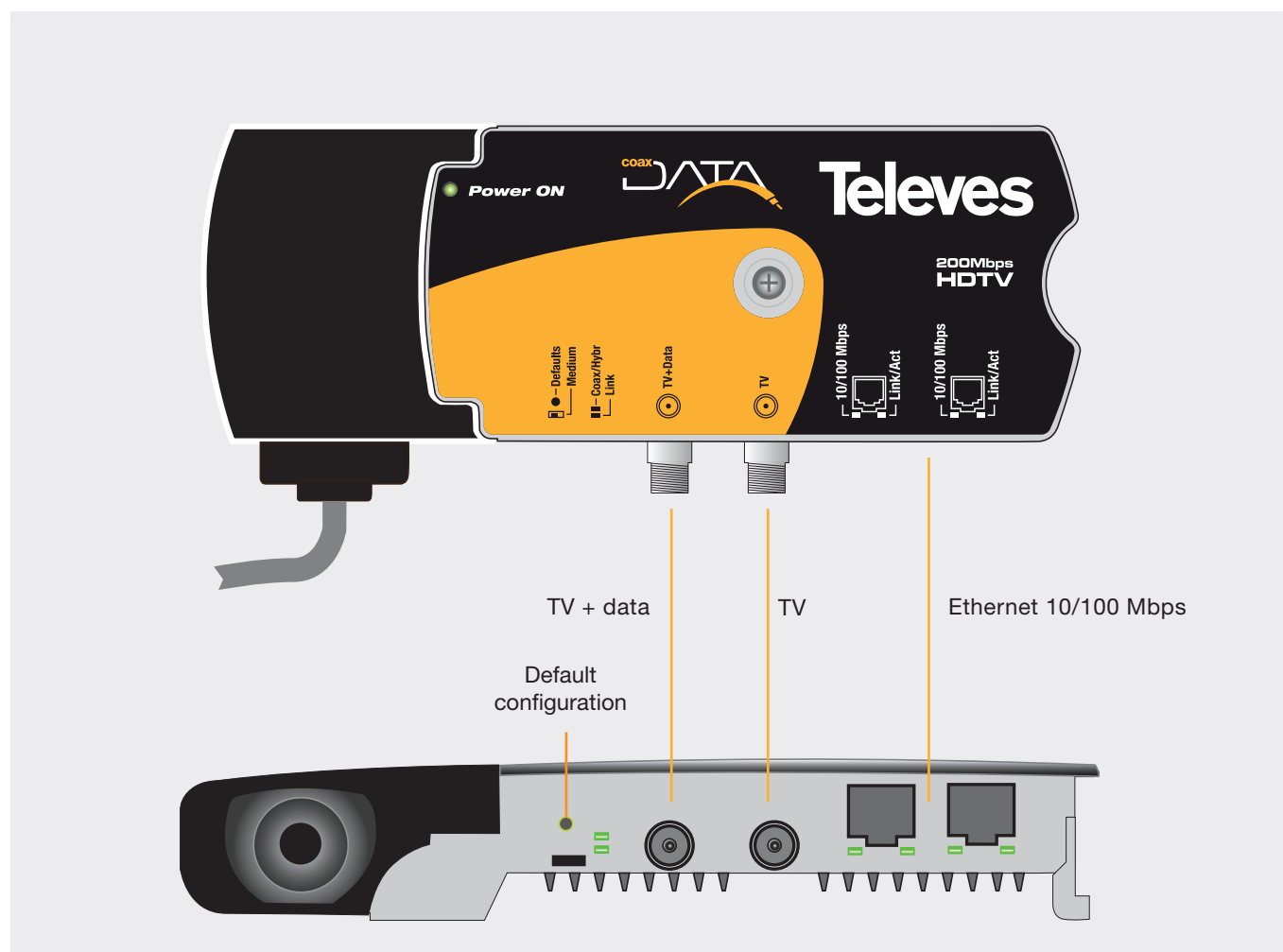■ 75 ohm adapater load
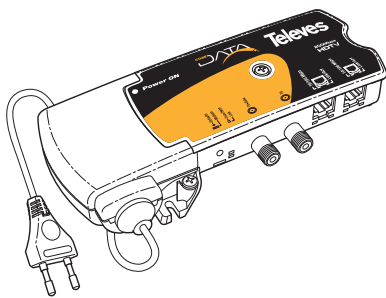
CoaxData 200Mbps-HDTV   Quick user guide   75 ohm adapater load

Knowing the CoaxData 200Mbps-HDTV

TV + data   TV   Ethernet 10/100 Mbps

Default
configuration

Ports of the Adapter

Ethernet ports

Two RJ-45 ports are those that allow you to connect your "CoaxData 200Mbps-HDTV" to the network card of your PC or laptop. The device has two Ethernet connectors that let you connect multiple devices: Laptops, VoIP phones, set top boxes, ... etc.

Data input. TV + Data

F female connector for data input and TV, directly from the TV outlet.

TV output. TV

F female connector to obtain the output of services and TV channels.

Default. Factory configuration.

Pressing this button for at least 3 seconds, the modem will load the default configuration from the factory.

> *WARNING: The factory setting disables MxU modem mode, activating the option HomeNetworking. Be careful when using this button because if modems are configured MxU mode this button will remove that setting and set the operating mode HomeNetworking.*

Medium. Medium selector

This switch allows you to switch between *only coaxial* (right) and *hybrid*. In the latter occurs connectivity in hybrid mode (both coaxial and electrical networks).

> *REMARK: The signal is always transmitted through coaxial cable.*

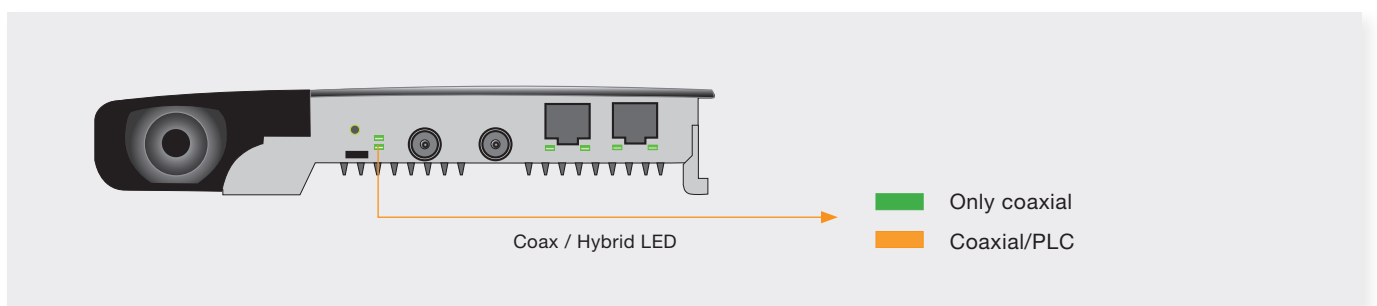Medium selector switch

◫ Only coaxial

◧ Hybrid: Coaxial + PLC
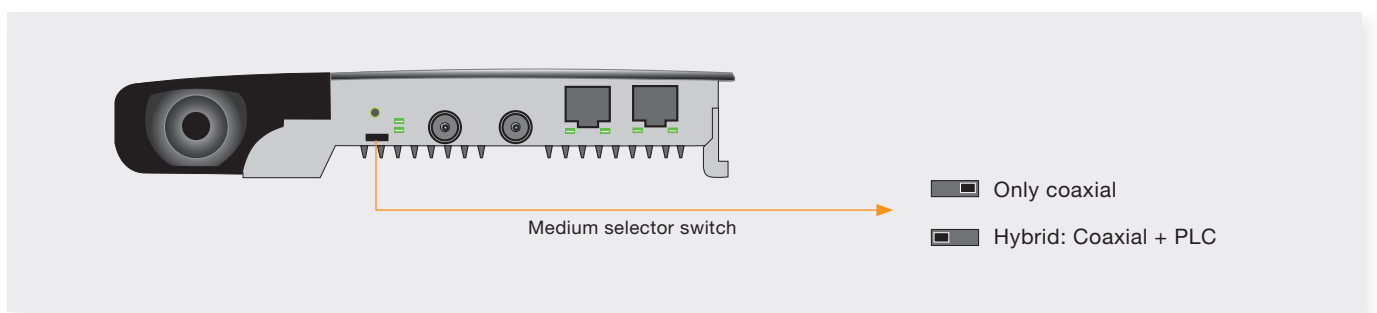
Adapter' LEDs

Coaxial/Hybrid

LED indicator of activated working medium:

- Coaxial: **Green**. Only connected via coaxial cable.
- Hybrid: **Orange**. Indicates that is connected to both transmission networks coaxial and electrical.

Coax / Hybrid LED

■ Only coaxial

■ Coaxial/PLC

Link

Tricolor LED (green/orange/red) which will glow whenever a connectivity is being established with other network element. In the case that the network has data activity, this LED will flash.

The color of the LED indicates the link quality established.

In the event that the device is a slave, it will indicate the link quality established with the master device, as shown in the following figure:

120 Mbps < Performance

70 Mbps < Performance < 120 Mbps

0 Mbps < Performance < 70 Mbps
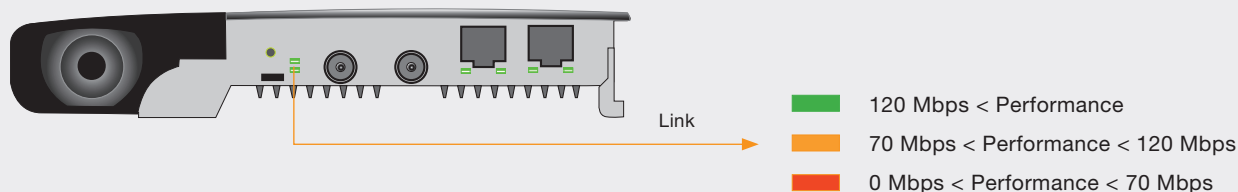
Link

The rates shown are not nominal rates, but rates after the FEC system (Forward Error Correction) eliminates the protocol overhead, and frames' redundancy.

Link/Activity Ethernet.

These LEDs turn ON when the Ethernet port is connected to an Ethernet network device. In the event that there is activity, the LED will flash indicating that it is being transmitting/receiving data.

10/100Mbps Ethernet

The LED is ON permanently in the event that the connection is established with the host at 100 Mbps. In the event that the connection established with the host after the connecting protocol is 10 Mbps, the LED will turn OFF.

10/100Mbps   Link/Act
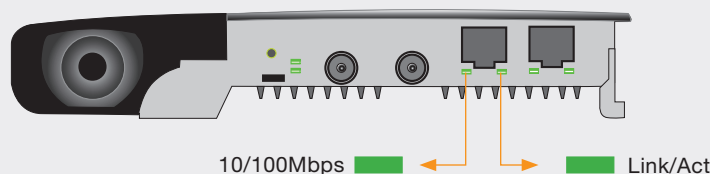
## Setting the operating mode of the modem

The operating mode can be set through the **CoaxManager application** for management/control. The modem has two operating modes, depending on the application or network which is going to be created with it:

■ **Home Networking**: This mode of operation is set at the factory, and allows the creation of a LAN (Local Area Network) where all devices communicate with each other. These networks are usually created when the modem is used to extend internet services within a house. Default mode that is retrieved using the Default button.

■ **MDU/MTU (Multi-Dwelling/Multi-Tenant Unit)**. This mode uses the network backbone of a building or house to communicate the headend with each one of the TV outlets, and allows to provide service to multiple dwellings. For this operating mode there are two devices:

  • **Master**: Device installed in the head of the distribution network. Manages all elements of the network and can be connected to an ADSL modem or any other device provided by the ISP

(Internet Service Provider) for the connection to the Internet.

- **Slave**: Device installed in each TV outlet of the coaxial distribution network. Provides the user access point to data.

For setting the operating mode, it must be used the Coax Manager application. The figure that follows is a screenshot of that application:
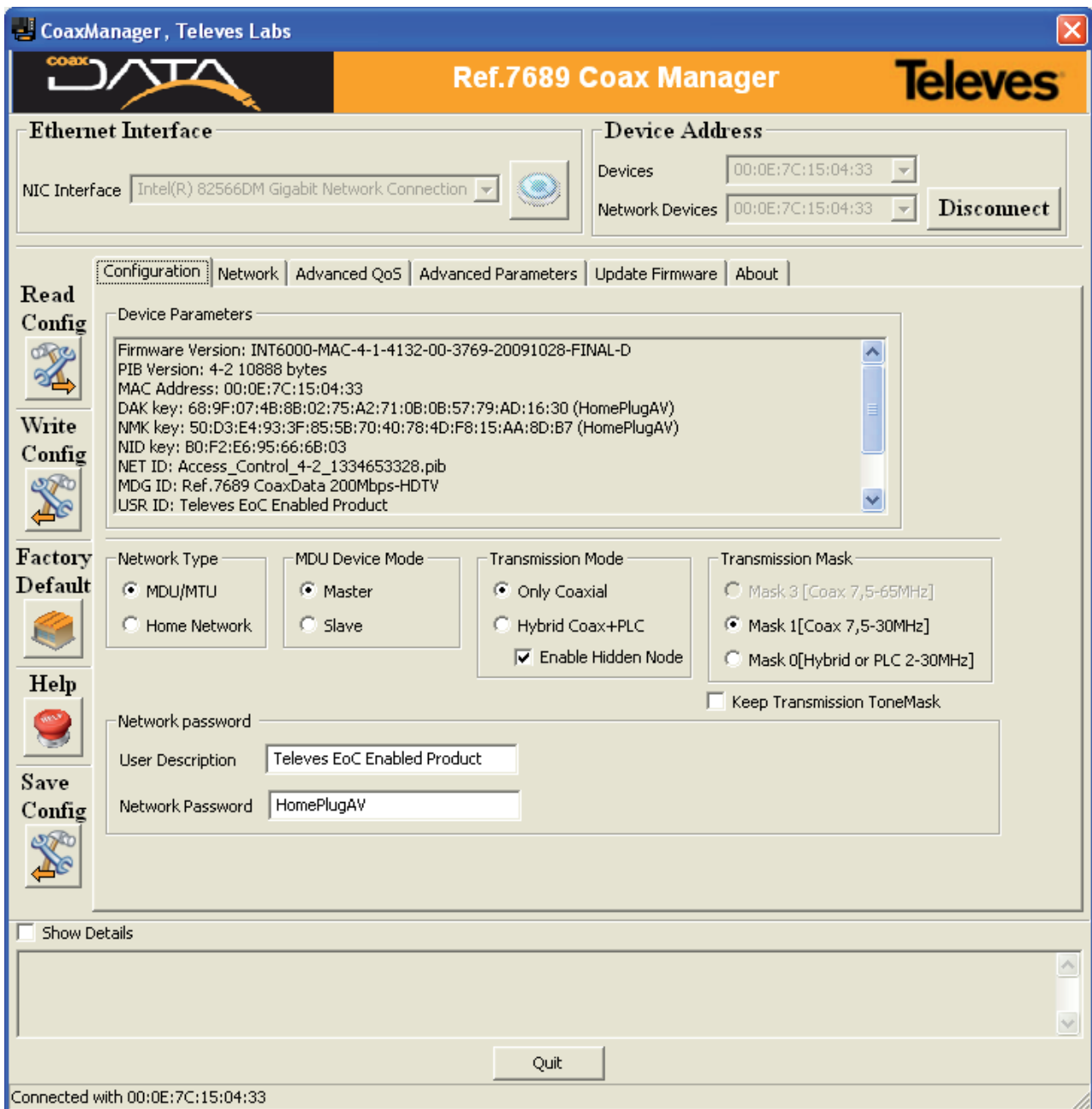

As shown in the configuration tab, the application can determine whether or not to enable the MDU, and if the mode of operation is master or slave.

Additionally, it may set the medium (coaxial or electrical network) through which the connection is made, indicating the maximum number of devices that are supported (253 elements).

HomeNetworking Installation of CoaxData 200Mbps-HDTV

The adapter **CoaxData 200Mbps-HDTV** is factory set to make a plug-and-play configuration for HomeNetworking. This can be done to create a LAN, enabling all devices to communicate with each other (peer-to-peer).
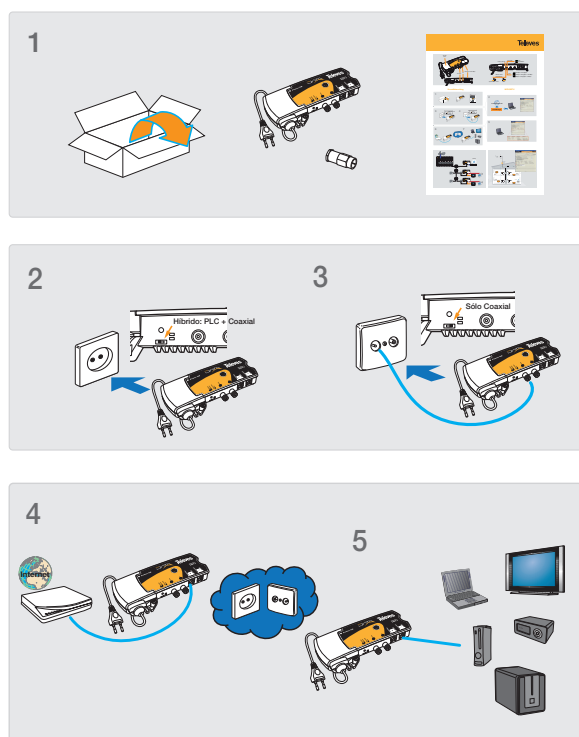

Once unpacked the unit (1) you must decide the transmission medium on which you want to create the LAN. There are two options: through coaxial cable (3), or use the hybrid option where both coaxial and electrical network are used (2). The latter means that communications will be established by using both electrical sockets and TV outlets.

To create the communication network, connect the units ref 7689 to the network elements you are planning to use by means of an Ethernet cable.

In a network to share Internet access, you would connect one of the device outputs of the Internet Operator to the modem 7689 (4), and then the items for which you wish have access to the Internet (5).

REMARK: The modes selected in the software application CoaxManager must match to the selection set in the selector switch of the unit 7689.

The following figure shows an application HomeNetworking Plug-and-Play with the **CoaxData 200Mbps-HDTV** unit configured in hybrid mode, thus enabling the intercommunication of the different Ref. 7689 either by coaxial or by the mains. This way, the communications network extends to all parts of the housing where there is an electrical socket or a TV outlet.

MAINS

the Internet

Router ADSL
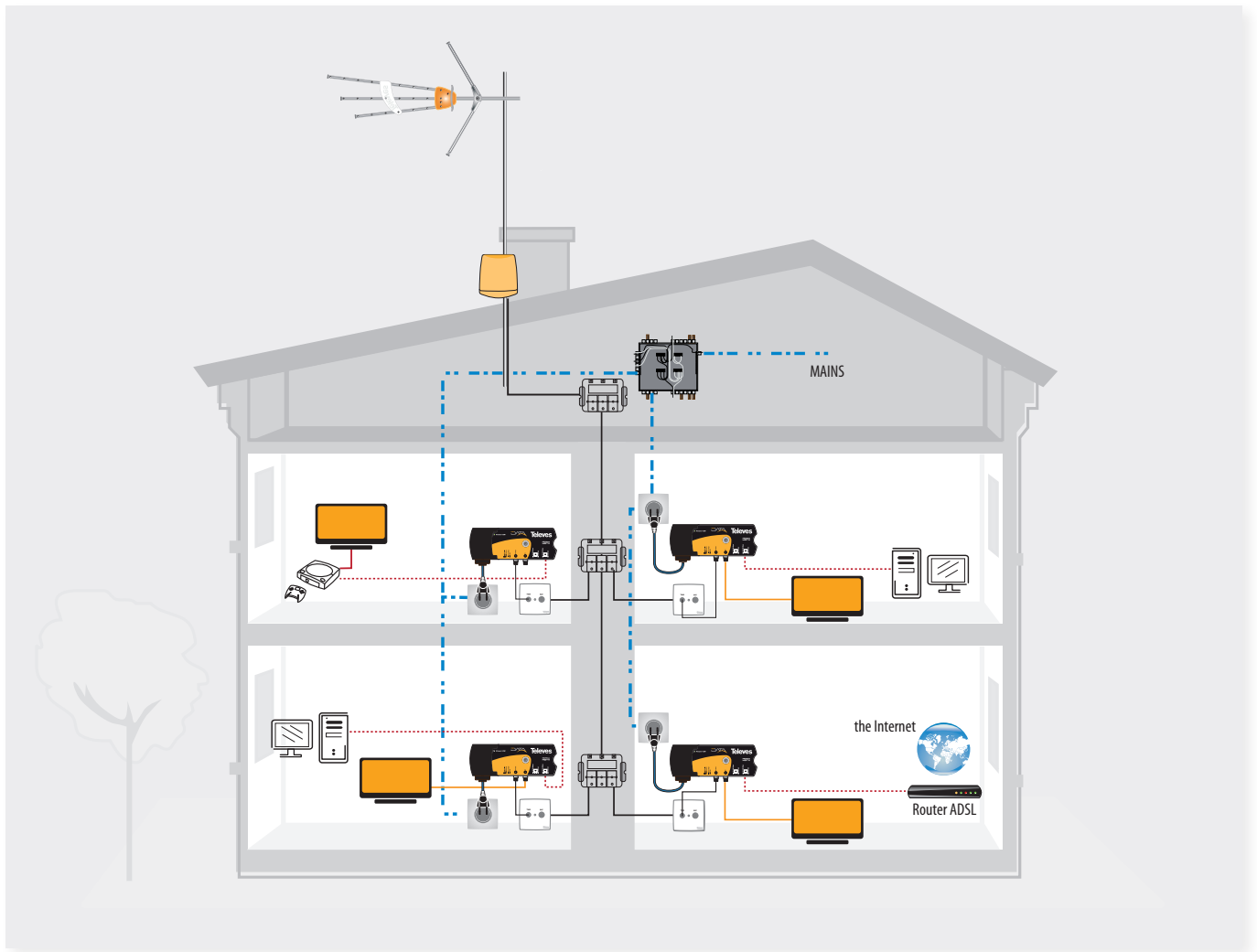
REMARK: In the case of using the electrical sockets, it is recommended to install a 75 ohm terminal load on the modem data output.

Installation type MTU/MDU with a CoaxData 200Mbps-HDTV in the headend

The following instructions show how to connect the **CoaxData 200Mbps-HDTV** at the headend of the coaxial distribution network already installed. To distribute the different data services: Internet, Video Streaming, ... etc, you need access to them in the place where the headend is installed. The figure below shows a general diagram of the installation of the modem CoaxData 200Mbps-HDTV in the headend:
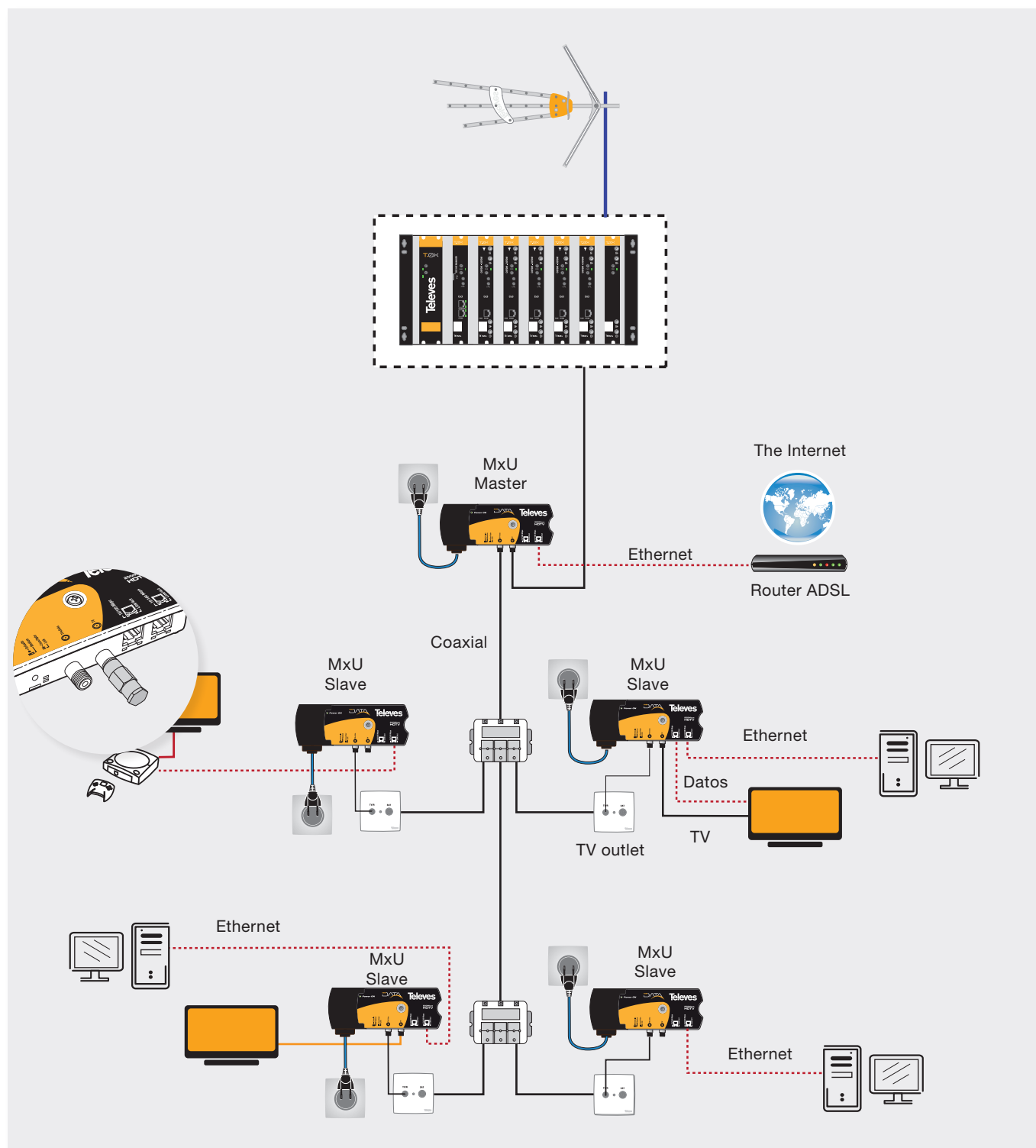
Setting the master mode of operation in the headend

To set up this data network, the modem installed in the headend must operate as MxU master.
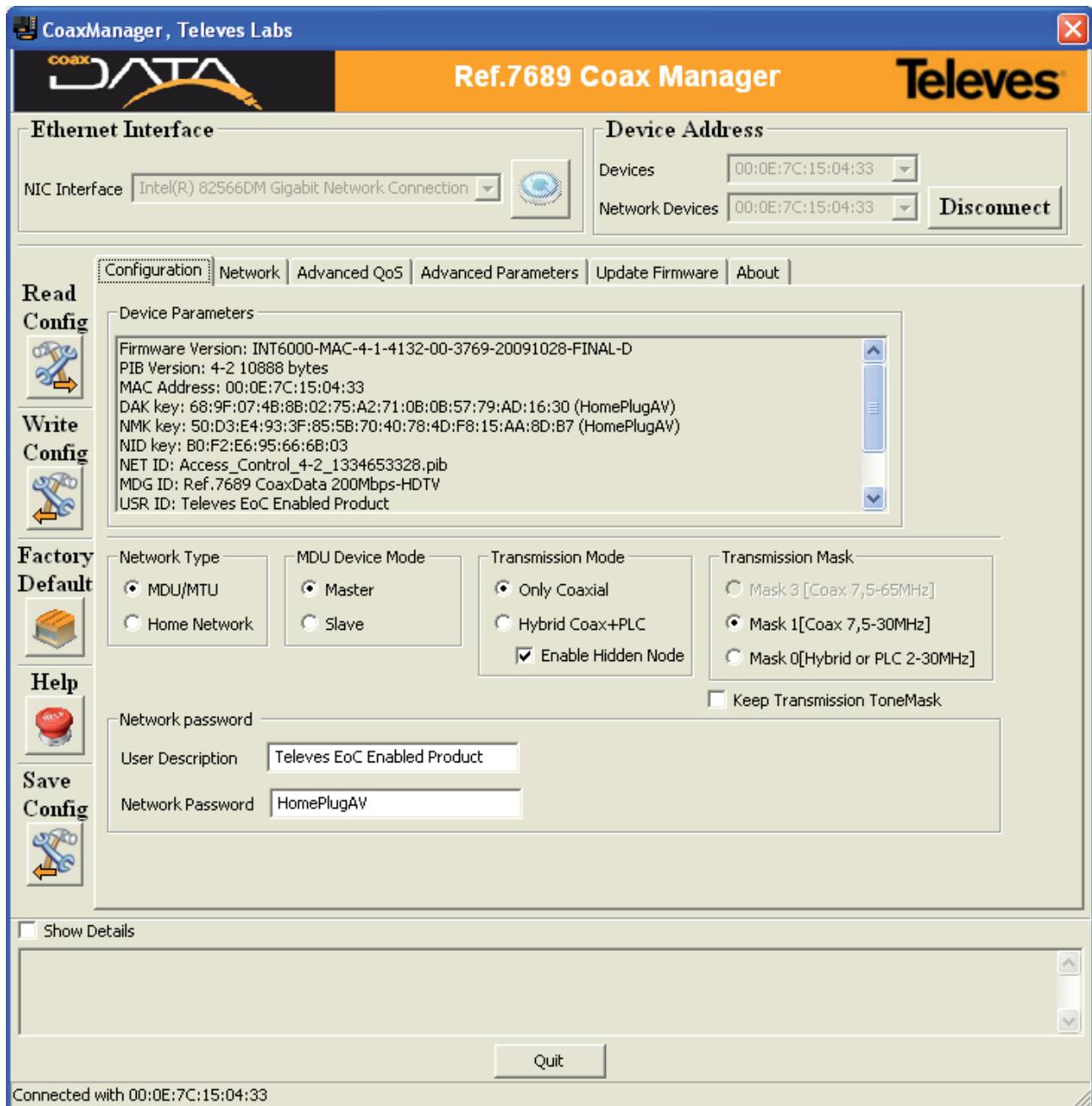

To set this mode, you must use the setup application called Coax Manager.

Connecting the master modem

El módem instalado en cabecera establece dos conexiones:

- **The Internet connection:** To connect the master modem to the Internet is necessary to have an ADSL router, cable modem or similar that provides the operator, and that gives us access to the Internet. To connect the unit "CoaxData 200Mbps-HDTV" with the ADSL Router, you must have an Ethernet cable.

- **Connection to the TV coaxial distribution network:** For connecting the master modem to the coaxial distribution network you must use the diplexer filter Ref 7654. The function of this filter is to combine data and TV signals with the minimum losses (<1dB), eliminating that noise generated by the headend, which may appear in the working band (2-30MHz). This connection is made through a connector "F" female.
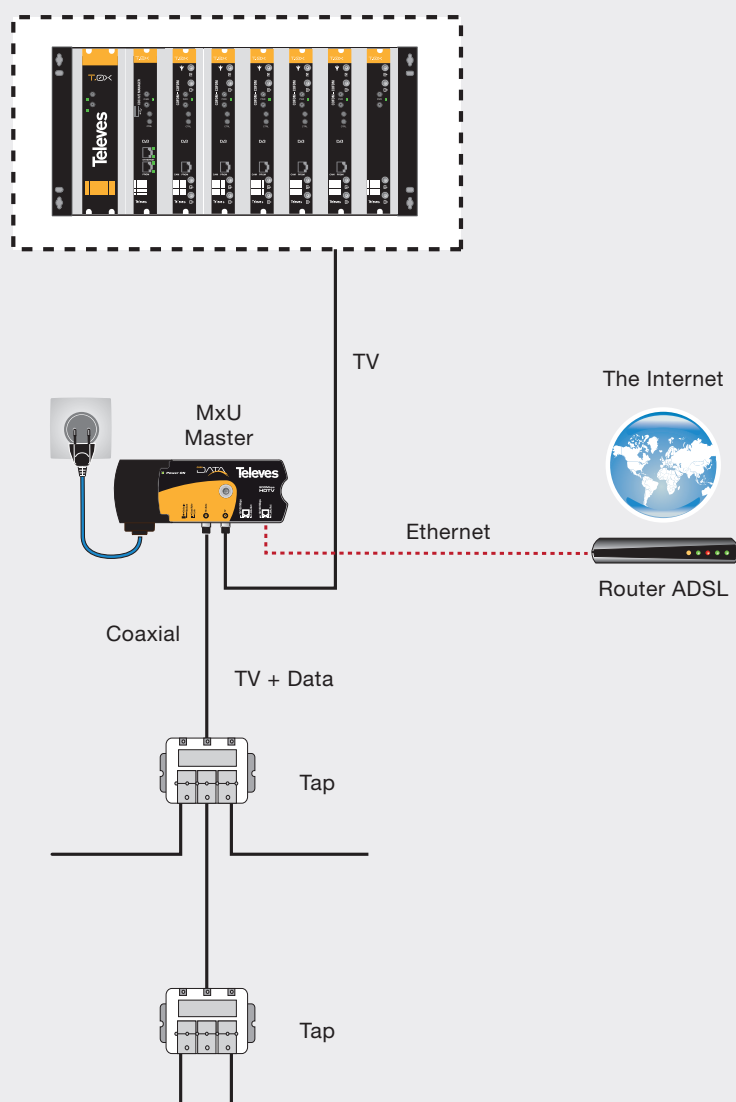
Installing the modem CoaxData 200Mbps-HDTV on TV outlets

The following instructions show how to connect the modem "Coax Data 200Mbps-HDTV", from the TV outlet up to your PC. Once installed, you can connect it directly to the network interface of your PC without any additional driver or software.

How to carry out the operating mode Master/Slave

For setting up the data network, it is necessary that one of the modems that will be installed at the headend, works in master mode; the rest of the modems installed in theTV outlets must be configured in slave mode.

Ethernet cable installation

- Connect one end of the cable to the Ethernet network card input of your PC.
- Connect the other end to the RJ-45 socket of the modem.

Your modem CoaxData 200Mbps-HDTV is now connected to your PC.

How to install the ABC modem into the coaxial distribution network

As indicated in the general characteristics of modems CoaxData 200Mbps-HDTV, maximum attenuation between any pair of them must be less than 85 dB in the return channel.
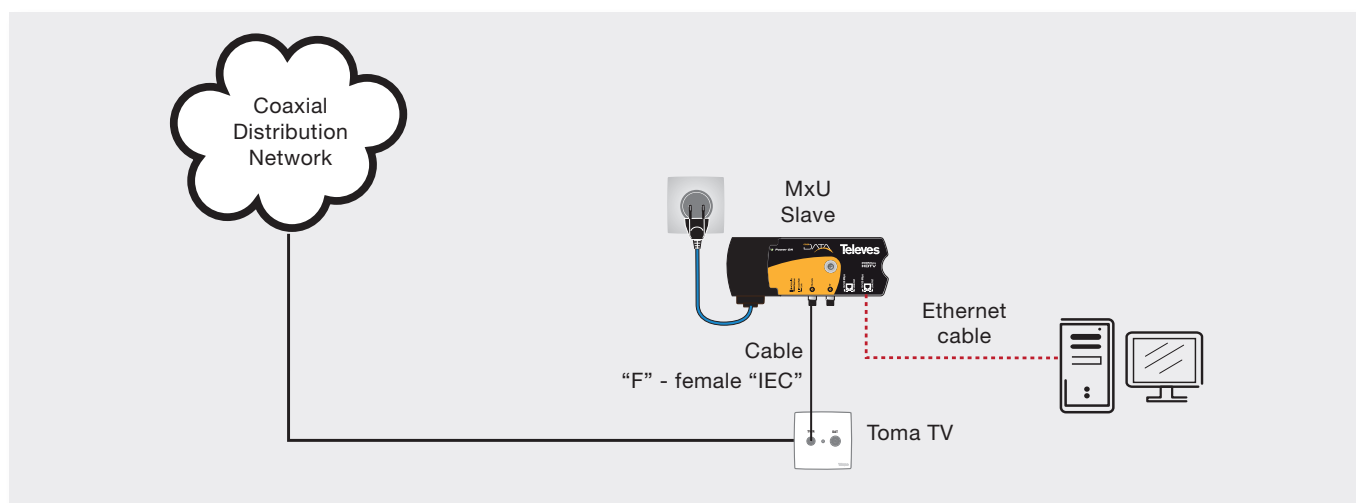
- Conecte el extremo CEI Hembra del cable coaxial que a la toma de TV (Conector CEI macho).
- Conecte el otro extremo CEI Macho del cable coaxial a la entrada de datos del módem (Conector F hembra) mediante un adaptador CEI-F.

Si todos los dispositivos están correctamente conectados a la red coaxial el Led "*Coaxial Link Status*" debe estar permanentemente encendido tanto en los esclavos como en el maestro. En el caso de que cuando conecte los módems a la red coaxial éste led no se encienda revise las conexiones de su instalación.

From now on your PC is connected to your data network, implemented on the TV coaxial distribution network!

Troubleshooting

If you encounter connectivity problems in your data network, check the following points:

1.- Check the status of your network by using the application CoaxManager

Run the application CoaxManager from the headend of the facility and verify that the network status is correct and includes all installed modems.
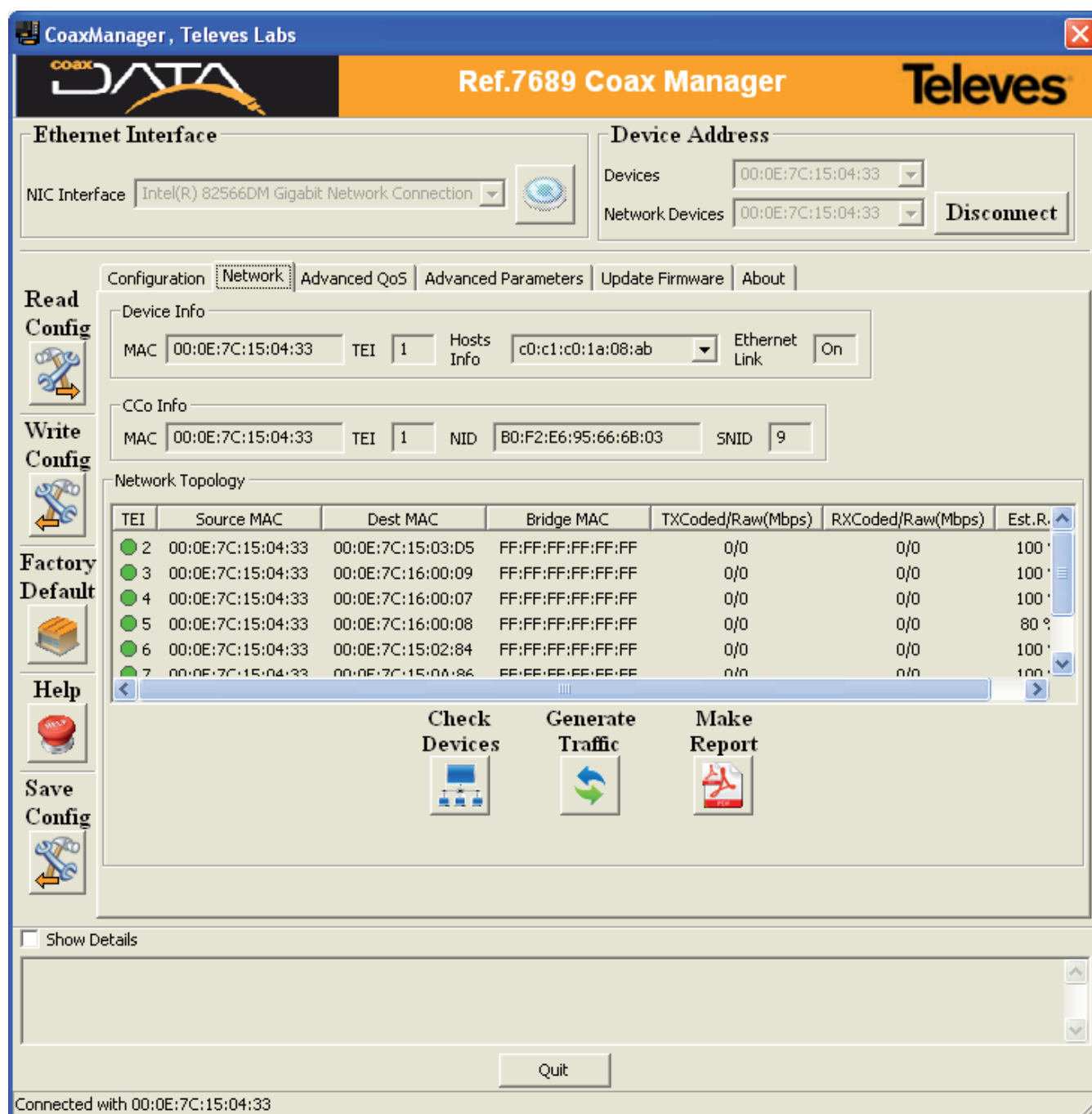
2.- In MxU installations, verify that there is only one master in the network and that it is installed in the headend

The presence of more than one master modem in the network may cause system malfunction. Make sure there is only one master in the network. You can check the settings of its devices by means of CoaxManager tool.

3.- Verify that the return channel is available in your coaxial network

The return channel, covering the working band 2-30MHz, must be operative in your coaxial network, both downstream (headend-outlet) and upstream (outlet-headend).

4.- Verify that the attenuation between modems does not exceed 85 dB in the working band (2-30 MHz) and that all connections have been made correctly.

5.- Filtering of the TV signal in the headend

To avoid interference of the TV headend in the data signal, it is suitable to use diplex filters.

It is recommended to use the Ref 7654 diplexer filter to combine the data signal with the TV signal, thus preventing the interference of the headend's noise in data signal.

Technical specifications

General

- IP Network Adapter to Coaxial and Electrical infrastructures.
- Flexible and scalable solution to build segments of up to 253 adapters each. Home Networking and MDU/MTU operating modes available.
- **253 devices** per master modem, working in Mode MDU/MTU. Coaxial Medium:
  - Up to 4 masters in the same frequency band.
  - A total of 1012 slaves
- Frequency range: **2-30 MHz**
- Max. attenuation supported: **85 dB**
- Output signal level: **130 dbµV**
- Power spectral density: **–50dBm/Hz**
- Minimum power spectral density: **-135dBm/Hz**
- Operating temperature: **-5ºC to 45ºC**

Range

- Coaxial cable: **800 m**
- Power line: **200 m**

LEDs information

- ON / OFF
- LINK. Link with the medium, and activity on it
- Coax/Hybri. Detection of the medium Coaxial /Hybrid
- Link / Act. Link and activity on Ethernet
- 10/100 Mbps

Standars

- Specifications Ethernet IEEE 802.3, IEEE 802.3x, IEEE 802.3u, Auto MDI / X
- HomePlug AV

Protocols

- CSMA/CA and TDMA

Transfer rate

- Up to 200 Mbps

Channel codification

- Automatic error correction based on FEC (Forward Error Correction) and TCC (Turbo Convolutional Codes)

Transfer Methods

- Asynchronous/Synchronous

Modulation

- OFDM - 1155 carriers, 1024/256/64-QAM, QPSK, BPSK

Security

- Encryption 128-bit AES

Connectors

- Mains plug EURO
- 2 "F" connectors 75Ω, low pass filter for data and high pass filter for TV services.
- 2 Ethernet ports 10/100Mbps. Auto MDI/X

Max. power consumption

- 5 W (I = 50 mA)

Mains voltage

- 100 – 264V~ 50/60Hz

QoS

Analysis and classification of traffic with:

- Prioritization by IEEE 802.1p VLAN tag
- Type of Service (ToS) and COS (Class of Service)
- IGMP snooping.
- Connection type (Unicast / Multicast / Broadcast)
- Classification supported by MAC Destination Address
- Classification by destination IP port
- Filters classifiers adjustables

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